DOCUMENT RESUME

ED 384 016 CS 012 180

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TITLE Applying Research: An Analysis of Texts for Consumers of Research.
PUB DATE Oct 94
NOTE 15p.; Paper presented at the Annual Meeting of the Mid-Western Educational Research Association (Chicago, IL, October 12-15, 1994).
PUB TYPE Reports - Evaluative/Feasibility (142) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Critical Reading; *Educational Research; Higher Education; *Research Utilization; Teacher Education; *Textbook Evaluation
IDENTIFIERS Practitioners; Research Implementation; Text Factors

ABSTRACT

The critical reading of research involves: (1) comprehension, (2) evaluation, and (3) application. A study examined six recently published textbooks to determine to what extent they attempt to help students learn to apply educational research; these texts were specifically designed for "consumers" of research (i.e., critical readers of research) as opposed to those who do research. In general, these texts emphasized the content needed to comprehend research and the evaluation of research as an activity separate from intended use. That is, all texts emphasized the comprehension and evaluation of research as research, with external validity being the main concern that would fall under application. Consistent with the positivist outlook assumed in most of these books, the concerns and functional knowledge of the practitioner was not much in evidence in most of these books beyond the introductions. The results of the study, therefore, were disappointing in that they revealed that there was very little attention paid to research applications in these books. The assumption seems to be that once the reader has comprehended the research and evaluated it, the implications will be evident. Operating within a quantitative framework, none of the books specifically dealt with the problems of moving from a statistically defined tendency within a population to making decisions about a non-random sample of that population. There was little effort to explain validity as a concept that changes both with the nature of the thing being evaluated and the person doing the evaluating. (Contains 20 references.) (TB)

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Running head: RESEARCH APPLICATION IN TEXTS

Applying Research: An Analysis of Texts for Consumers of Research

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Presented at the 1994 meeting of the
Mid-Western Educational Research Association
(October 12-15, Chicago, IL)

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Abstract

The critical reading of research involves comprehension, evaluation, and application. Using application as a context, we examined six educational research texts which were explicitly written for consumers of research. In general, the texts did not emphasize application and assumed a limited view of what application might include.

Applying Research: An Analysis of Texts for Consumers of Research

The teacher who wants to determine if cooperative learning works in his first grade classroom and engages in action research or the testing specialist who designs a study to test her hypothesis on the interaction between speededness and predictive validity have little need to wonder about the utility of their research in terms of their own personal needs. Nor does the team that puts together a series of surveys on behalf of a school board. In these cases, particular questions have been asked and the research designed to provide information viewed as specifically useful to the individuals who are going to make decisions and set policies. However, in all of these cases, there is a possibility that the report of the research will be published. The readers of these research reports will be operating in different contexts than those who performed or requested the original studies. Although the levels of sophistication will vary, these readers are consumers of research information.

It was in this latter context that D. C. Phillips (1980) asked, "What do the researcher and the practitioner have to offer each other?" His conclusion was that there wasn't very much. Few in the university educational community today, with the increased emphasis on practitioners as researchers and research partners, would agree in terms of what practitioners have to offer. Nor would it appear that most educators at the university level would agree that researchers have little to offer, although this was the point Phillips argued most earnestly, since learning to critically read research reports is part of the meat of most graduate programs in the helping professions/social sciences. Counselors, teachers, school administrators, sociologists, nurses, and social workers may have programs with expectations that vary in many respects, but all seem to support the idea that graduates of advanced studies at the very least must be competent consumers of research.

What does it mean to "consume" research. While several interesting images come to mind (If there are enough consumers, will all the research be used up?), the intent seems to involve the critical reading of research. We started with a three component model for critical reading of text. When people read critically, they must understand the intent of the author (comprehension). Furthermore, they must make judgments of worth concerning what the author is saying (evaluation). The content, along with judgments of worth must then be considered in terms of

significance for decision making processes and practice within contexts which are characteristic of the reader (application). Similar or compatible schemes are common in subject area and critical reading models, and this one had formerly been used by us to describe the critical reading of reviews (Steinley, 1991; Steinley, Erion & Romereim, 1993). Of particular interest to us was the third category, application. If consuming means reading research with application in mind, what does it mean to apply research?

Phillips (1980) spoke of researchers coming up with "some solid findings applying to all children, or to some important subsets of children" (pp. 18-19). He argued that 1) research results do not come in a form which simply indicate how they should be generalized, but rather links have to be established between the world of practice and the theory, 2) people with different sets of linking premises and assumptions will see the same set of results as having different implications, and 3) the premises of researchers often are not made clear (are suppressed) so that the conclusions which researchers draw from their research ought to be treated as suspect. A special case of suppressed assumptions which Phillips does not discuss is the assumption that the course of action which can be argued as most reasonable for a population is most reasonable for a subset of the population, although this can also be approached as a a non-trivial problem in statistics (how likely is a tendency in a population to be manifested in a non-random sample of that population?).

Phillips (1980) seemed to imply that one must generalize from research results to use them and this emphasis on generalizing as a necessary part of applying research occupied Firestone (1993) as well. In the context of defending the utility of qualitative research, Firestone argued that three types of generalization of research must be considered. The most often discussed (sample to population) is the strength of quantitative research, not qualitative research. However, research results can be generalized to another case (case to case) or a theory (case to theory).

Carr and Kemmis (1986), writing in the context of action research, organize educational research as being in one of three traditions, a natural science or positivist approach, an interpretivist approach, and a critical approach, each with a somewhat different purpose for research. In the positivist view, research leads to theory which in turn allows prediction or what Livingston and Castle (1989) characterize as explanation and direction. The interpretivist view serves to "deepen insight and enliven commitment," acting indirectly to to influence action "through the mediation of

the critical reflection of individual actors" (Carr & Kemmis, 1986, p. 93). The approach to research in a critical social science draws heavily on Habermas and is one in which the researcher is seen as undertaking an actions with social and political significance with action research providing a means to unify theory and action.

Huberman (1990) indicated the effects that research might have as including cognitive or affective changes in practitioners (conceptual use) and changes in practice (instrumental use). Huberman also indicated that research results could be characterized by the extent and durability of their use, as well as the degree to which they lead to transformation. Secondary effects might include linkages between organizations and the individuals in those organizations, as well as "spillover," organizational, and career effects.

Livingston and Castle (1989) describe five ways in which teachers might use research. The first, which they call application (choice of "use" or "application" seems somewhat arbitrary), is use of educational research in the tradition of What Works (United States Department of Education, 1986). Educational research leads to "big principles" which provide answers or directions for practice. The second, related to the first, is justification or validation for a course of action or decision. Research can also lead to contemplation and deliberation, similar to the aim of interpretivist research (Carr and Kemmis, 1986). Transformation is part of the critical social research concept of Carr and Kemmis (1986). Research can lead to a critical examination of the assumptions underlying modes of practice. Lastly, practitioners can produce research to guide and examine their own behaviors.

There are, then, a variety of ways to approach what is meant by application of research and a number of factors which might be considered. When we started to try to tease out the relationships between comprehension, evaluation, and application, we thought of research application as existing along a continuum. At one end was immediate action based on research results. Having read that there is little difference in test results when classrooms have 17 students or 23 students, a district ups classroom size from 15 to 20. Since praise has been seen as useful in classroom situations, one of the topics for inservice days will be the use of praise in the classroom. At the other end of the continuum was a more conceptual or interpretive use of research. The researcher whose study is directed at clarifying a point in theory and the teacher who reads a

review of research on the grading of essay questions may both simply change schema or understanding, with no immediate changes in behavior. We have added to this continuum an understanding that the nature of generalizing can be variously conceived, depending in part on the philosophical position taken on the nature and uses of knowledge.

The application of a given research study is not necessarily direct, then. When one applies research, one starts with the understanding of the research report and one's evaluation of the research in light of the situation (contextual factors generally seen as relevant to external validity) and ones previous understanding. It is ones understanding (perhaps changed by the interaction with an particular research report) that is ultimately applied.

Research in this model is understood in ways which are situational to the reader. The process of critically reading involves an understanding that takes into account the intent of the researcher, the accumulated knowledge of the reader, and the intent of the reader. The evaluation of the research (judgments concerning its validity) is analogous to the validation arguments for a test where the intended use as well as the characteristics of the test itself must be considered. Recognizing this, we looked at Messick (1989) for an overall framework for placing the concepts and skills involved in critically looking at research (see Figure 1). Messick used a broad definition of testing in his argument, "any means of observing or documenting consistent behaviors or attributes" (p. 5). This represents a subset of the activities carried out in research and we suggest that Messick's argument is generalizable to all forms of research in the broad sense.

In the general sense, the categories in the first row (the evidential basis) include the familiar constructs of internal validity and generalizability. It is in Messick's consequential bases for validity that the evaluation process is expanded beyond that generally suggested in texts on research. All research involves value-laden choices. Choice of phenomena to study, labels, methodology, and interpretations are value-laden activities common to any research endeavor with semantic, rhetorical, esthetic, and ethical dimensions.

Research is a purposeful activity. Results are reported and interpreted to accomplish goals described by the researcher. Any application may have expected consequences and will very likely have unexpected consequences, although it is our impression that the social consequences of research is most often mentioned when it is judged that there are none.

Messick's matrix was specifically aimed at a unitary concept of test validity. Our purpose was a unitary concept for evaluating research which included the possible uses of the research. The judgments made in research interpretation and use involve comprehension. Research interpretation includes internal validity as well as considering value implications. The generalizability of research operates in at least several dimensions and is dependent on the intended use. Judgments of use should include likely consequences of that use.

	Research Interpretation	Research Use
Evidential Basis	Research qua Research (RR)	RR + Relevance/Utility (RU)
Consequential Basis	RR + Value Implications (VI)	RR + RU + VI + Social Consequences

Figure 1. Framework for identification of processes in critical reading of research (based on Messick, 1989)

Having arrived at a fairly broad view of what application might involve, we decided to look at how this is handled in textbooks with the belief that textbooks aimed at consumers of educational research are intended to provide a means for practitioners to become critical readers of research. If, as we have supposed, critical reading involves attending to comprehension, evaluation, and application, how is this reflected in these textbooks? More specifically, how and to what degree is application of research addressed in texts intended for instruction of consumers of educational research in terms of differing perspectives of what it means to apply research?

In order to explore this question, we selected six relatively recent texts (see Table 1) which are distinguished from the many other educational research texts that have appeared over the last six years in that they are specifically intended for consumers as opposed to those who will do research. We both read each text independently looking for instances of application from any of the

perspectives suggested above. We particularly considered philosophical perspective as indicated in Carr and Kemmis (1986). From Livingston and Castle (1989) we took the list of possible uses of research which seemed to go beyond Huberman's conceptual and instrumental categories. We also considered the discussion of generalizability, in particular noting whether it went beyond the concept of external validity. We used the modification of Messick's matrix for making broad generalizations since it quickly became evident that none of the authors had had something like this in mind when they wrote their texts.

Table 1
Texts Analyzed

Author(s)	Publication Date	Title	Comments
Black	1993	Evaluating Social Science Research	After an overview of research, organized around different aspects of research to be evaluated.
Borg, Gall, & Gall	1993	Applying Educational Research: A Practical Guide	Definitely practitioner oriented. Types of research. Includes forms for evaluation quantitative and qualitative research.
Hittleman & Simon	1992	Interpreting Educational Research: An Introduction for Consumers of Research	Organizes evaluation of research by section of research report with questions for each section, differentiated by type of research.
Jaeger (ed.)	1989	Complementary Methods for consumers.	AERA publication with chapters on types of research by respected names in field. Not intended solely
McMillan	1992	Educational Research	Chapters on types of research follow philosophical underpinnings of researched. Criteria for evaluation generally ignore practitioner's situation. Includes evaluation questions for quantitative, historical, and qualitative research.
Viera & Pollock	1988	Reading Educational Research	Organized on broad separation of quantitative (more extensive) and qualitative research with emphasis on science as theory building.

In general, these texts emphasized the content needed to comprehend research and the evaluation of research as an activity separate from any intended use. That is, all texts emphasized the comprehension and evaluation of research as research, with external validity being the main concern that would fall under application. Other than a generally positivist outlook (Carr & Kemmis, 1986), not true of some of the chapters in Jaeger (1989) (eg. Wolcott's chapter on ethnography), the textbooks we examined did not lend themselves to many other facile generalizations. Consistent with the generally positivist outlook, but somewhat surprising in books written specifically for practitioners, the concerns and functional knowledge of the practitioner was not much in evident in most of these books beyond the introductions. For example, although McMillan (1992) explicitly recognizes the importance of a situational understanding of research, he described the purpose of science as being to describe, predict, control, and provide explanations, with the main purpose being sound explanations. Hittleman and Simon (1992) characterize research consumers as answering "educationally related questions [by] reading an applying [the results of] research producers" (p. 2). "Teachers at all levels continually make decision about instructional activities...They base these decisions on their experiences, other teachers' experiences, and their understanding of accumulated knowledge about education" (p. 1), but their emphasis in evaluating research was in terms of examining methodology. In Jaeger, Shulman (1989), discussing generalizability, noted the problems caused by the usual lack of random samples, but ignored the problem in moving from a population back to some segment of that population. He used the metaphor of an inferential bridge (based on a 1956 paper by Cornfield and Tukey) for generalizing from a sample to a sample and extended it to generalizing across settings and tasks. The task of the reader of research is to determine if inferential bridges can be built, noting that different research methods "carry with them different ways of asking questions and often different commitments to educational and social ideologies" (pp. 11-12).

When the knowledge of the practitioner was noted, it tended to be devalued. Borg, Gall, and Gall (1993), for example, discussed four approaches to making educational decisions: personal experience, expert advice, searches of the research literature, and conducting action research. These were apparently seen as disparate approaches. The third approach was recommended after a discussion the limited nature of personal experience and a suggestion that

experts be primarily used to "locate relevant research literature rather than relying entirely on the conclusions that they have reached on the basis of this literature" (p. 10) . Action research was suggested if

> ...a literature search does not produce a satisfactory solution to your problem ...[since] ...action research is a far better basis for decision making than personal experience. Most of the discoveries and progress made by Western civilization during the past two hundred years have been achieved by using the scientific method to attack problems and questions. Action research employs the scientific method to solve the problems of the educational practitioner . (p. 11)

In a discussion of the need to consider the academic field in evaluation of research, using the example of addiction, Viera and Pollack (1988) stated:

> Interestingly, some of the most heuristically useful work in this field is being done not by professional researchers but by practitioners. Practitioners, whether they conceptualize themselves in this way or not, are in a very real sense doing qualitative research: empirically immersing themselves in the topic. They can thus be more likely to discover previously unsuspected patterns than are researchers, especially if the researchers have a quantitative bias and only collect data on variables they have previously defined as relevant. These practitioners' qualitative data were not collected to test hypotheses; their suggestions about causal relationships in addiction are only that-suggestions. And their samples are very biased; generalizability of their observations is thus very limited." (p. 232)

On the other hand, McMillan (1992) cautions readers to "Keep a balanced perspective about the relative contributions of research and professional judgment" (p. xvi).

As indicated above, all texts did address generalizabity. With the exception of Viera and Pollack (1988) and Jaeger (1989), this was overwhelmingly a discussion on external validity with Black (1993) restricting his discussion to the "representativeness" of the sample. Viera and Pollack discussed at length what Firestone (1993) described as generalizing to theory. Given the multiplicity of chapter authors and approaches it is not surprising that different viewpoints on generalizability were expressed in Jaeger. Wolcott (1989), for example, tells the reader "I don't believe that educational research of any type has yet had great impact on educational practice, and descriptive research portraying how things really are does not seem to capture the imagination of those impatient to make them different" (p. 203). He adds that

> ...ethnography does not point out the lessons to be gained or the action that should be taken. Worst still, anyone who takes the time to read a descriptive account will probably realize that the complexity of the setting or problem at hand has been increased rather than decreased. (p. 203)

Porter (1989), as an example of the most common approach, discusses in his chapter on comparative experiments generalizing across subjects, experimental conditions, and outcomes. "One way to think about external validity is to imagine a particular experiment and then attempt to identify situations in which you believe the results might not apply" (p. 405). Borg et al. directly addressed generalizing from case to case and explained that

> ...results may have high external validity for some local settings and low external validity for others, depending on the similarity between the research conditions and local conditions. Thus, potential users must compare the experimental conditions with the local conditions to which they want to generalize the results and make a decision about how well the findings are likely to apply. (p. 303)

They go on to say that in order to apply research, one must see if local population is like the research sample. Their discussion also raised the issue of interactions (do results apply to some members of population, but not others) and the degree to which settings are similar.

The results of our study were less than satisfying in that there was very little attention paid to application. The implication seems to be that once one has comprehended the research and evaluated it, the implications will be evident. Operating within a quantitative framework, none of the books specifically dealt with the problems of moving from a statistically defined tendency within a population to making decisions about a non-random sample of that population. In general, there was little effort to explain validity as a concept which changes both with the nature of that being evaluated and the evaluator. Despite the inclusion of qualitative research as one form of educational research, the interpretivist and critical theory approaches to understanding educational phenomena with their implications for practice were not generally in evidence. Nor was a general discussion on philosophy of science with implications for comprehension, evaluation, and application, although both the McMillan and Jaeger texts explicitly addressed the importance of understanding different perspectives on research.. Eichelberger (1989) provides an example of how this might be approached in the first chapter of his textbook for researchers (the last chapter is an explicit discussion of using research to help understanding and to make decisions). Both chapters would make excellent additions to any text intended for consumers of research.

Over the last 50 years there have been periodic attempts to see if educators read the professional literature. In almost all cases, the findings have indicated that they generally don't

(Latham, 1993). The lack of attention to application in texts which are presumably intended to help practitioners become people who will understand and use the research may explain, at least in part, the perception that reading reading research is not useful.

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